DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE

IN REPLYING, ADDRESS THE
Communicable Disease Center
Bacteriology Diagnostic Laboratory
P. O. Box 185
Chamblee, Georgia

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Dr. Joshua Lederberg
Department of Genetics
University of Wisconsin
Madison, Wisconsin

Dear Josh:

Thanks so much for your letter and the answers to my questions about the Salmonella transducing system. I was surprised to know that this system is not susceptible to DNase and that the tranducing agent is so closely associated with phage activity.

I am enclosing a semi-final draft of our paper. We would appreciate your comments and suggestions. Would you please return it as soon as you have finished reading it since we have still not had it approved for publication. The paper is, at best, a preliminary report as you will see for every page suggests other experiments which should be done to get some of the answers. However, considering the circumstances under which we have to do research at CDC I guess we were lucky to stir up anything. Brown, who is an Air Force Officer, has other duties this summer, but if they let him stay here we hope to go into some of the work in more detail in the fall. If they transfer him, I don't know if I will be able to continue it or not. As you will notice we have made no attempt to determine concomitant capsular changes or to study the antigenic nature of the transduced flagella. The phage should be separated or inactivated and the effect on transduction studied and so on ad infinitum.

I am particularly concerned as to whether we are off base in the use of the term transduction as defined and interpreted by you and Zinder. We do not wish to suggest similarities to the Salmonella system that do not exist. Should we call this transformation or induction? You will see that motility cannot be induced in the culture from which the transducing phage was isolated (B. anthracis strain Ohio, nonmotile of course) but that this phage can transduce motility to other strains of B. anthracis. The same phage when propagated on

motile B. cereus will also transduce motility to anthrax. The rough measurements of the frequency of transduction suggest that of the Salmonella, pneumococcus, or Hemophilus, rather than the diphtheria system. It may well be, especially in light of the work of Tomcsik and Manninger and Nogradi, that the phage in the B. anthracis system is just an extra added attraction or at best acts as a mechanism for the release of the genetic material from the donor cells. However, there is no clear cut evidence of transduction of motility without some degree of lysis of the recipient cells. However, lytic activity of the Ohio phage on B. anthracis does not necessarily result in motility, (true for 3 of 9 strains of B. anthracis). Lysogenization of the transduced cultures, on the other hand, appears to occur regularly but the phages isolated from these cultures are quite variable in their transducing activity.

Thanks for your interest and for whatever suggestions and criticisms you may wish to make.

Best regards to you and Esther.

Cordially,

Bill Cherry

William B. Cherry, Ph. D.
Assistant in Charge
Diagnostic Bacteriology Unit